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lies only too fixed between. It is this step-motherly repression, this reluctance and paucity of concession, the shoals of nice scruples on which he tries to run aground the argosies of hope and promise which may be yet the best thing in a movement so vast, and so rapidly growing, — these are what come dangerously near making this a “psychology without a soul,” in a sense more fatal than the author’s insistent hylophobia dreams of. This is a book of the old dispensation, dignified and prophetic of, but not itself a gospel of, the new. These souls are not lost, although they die without seeing the full light. The intellect is convinced, but the heart is not converted. Nature is not yet heartily loved and trusted. The reason for this halting attitude, we believe, lies not in the author’s lack of long familiarity with the practical details of laboratory and clinic so much as in a sluggishness of religious perception, a lack of prophetic insight and depth. No one has so clearly seen that the old days of opposition between faith and science—the days of Huxley’s early papers, of Tyndall’s prayer-gauge, of a materialism never academic, and now made obsolete by dynamism—are forever gone, and that a new sense of harmony has arisen, as shown in neo-Christians like Phillips Brooks, who boasted that he had never preached on the relations between science and religion, but always had felt them one; like Drummond, who sees in evolution only the most potent reinforcement of Christianity; like C. M. Williams, in his “Evolutional Ethics;” Paul Desjardins, and many younger men who are to shape the future. Professor Ladd can no more extract sunshine from a cucumber than he can get new religious light or heat from scientific psychology, which to an increasing number is more and more dear because big with promise for larger Christian living. These things should, of course, have no place in a text-book, but should shed a kindly light over it. Without it, we repeat, we are dealing with psychology without a soul, and the teacher is merely kindling a back fire, lest the fire of the “burning bush” spread and kindle the soul with a little enthusiasm.

These home-spun metaphors may express, at least, the present writer’s sentiment toward the general spirit and attitude of the book. Its other chief defect is shared with many other text-books. The time, we think, has fully come when every psychological course, and, therefore, text-book, should at least glance at the anthropological, the morbid, the psychogenetic side. Of all three of these fields, taught every year at this university with much copiousness, there is scarcely a trace, while instinct is very inadequately treated. Unlike details concerning the senses, these lie in the scope of the book, but are simply ignored. Yet, just these are the newest and most promising lines of development. In fine, like Porter’s “Intellect,” this volume is a very valuable and faithfully made summary within its field, and it is there it should be judged. It contributes little that is new, and in its present bulk can do little good as a class book. The small edition which will no doubt follow, we shall await with interest.

Grundriss der Psychologie, auf experimenteller Grundlage dargestellt.
 von OSWALD KÜLPE, Privatdocent an der Universität Leipzig.
 Mit 10 Figuren im Text. Leipzig: Verlag von Wilhelm Engelmann: 1893. pp. viii., 471; Index, 472-478.

To write a text-book of experimental psychology—that is, of psychology—in the present state of the science, is a very difficult matter. This statement is, perhaps, best proved by the fact that, until the appearance of Dr. Külpe’s work, there existed no text-

book that could in any sense be termed adequate: and this, although more than one psychologist of eminence had brought the matter and manner of his teaching to publication. The reason is not far to seek. Modern psychology demands a more universal training than does any other science. Its representative, in order to be a psychologist, must be neurologist, psychologist and philosopher. He must have worked over the field of experimentation, neurological, psychophysical and psychological, for himself; the three adjectives are arranged in the order of the thoroughness necessary for psychological equipment; and he must be able to psychologize, to coördinate experimental results in a system, under the light of logic (epistemology) and—though to a less extent—ontology. Not to many men is given the ability to weigh details and to generalize from them in equal measure; and not many find time and opportunity for a systematic study of four separate sciences and literatures.

Dr. Külpe is especially well fitted for the task which he has set himself. A philosopher (more particularly an epistemologist) and a teacher of philosophy, he is at the same time an experimental psychologist of great critical and constructive power. He is a pupil of the two foremost living German psychologists—W. Wundt and G. E. Müller. The *Grundriss* is dedicated to the former master, and the author's indebtedness to him is constantly apparent. But none the less certainly is Müller's influence observable, in the general, sectional arrangement of material; and in the contents of certain chapters (e. g., I. 4). In psychophysics, Dr. Külpe, who has been for some years chief assistant in Wundt's Institute, has had a very exceptional experience, both pedagogical and experimental. The former has stood him in good stead in the composition of I. Chap. 1 (On the Analysis of Sensation); a chapter which is nothing less than masterly. The latter has rendered his judgment singularly good, in the most diverse departments of investigation. The vexed question as to the nature of centrally excited sensations (reproduction and association), he approaches as only one who has himself experimented in the matter can: for the section on feeling he had laid a foundation in his dissertation *Zur Theorie der sinnlichen Gefühle*: tonal fusion he is qualified to discuss by his unusual musical gifts and education: the theory of temporal association he has already handled, in a series of articles in the *Philosophische Studien*: and finally, his *Habilitationsschrift* dealt with the doctrine of will in modern psychology. Apart from these special researches, he has taken part in all the Leipzig *Arbeiten* of recent years.

A book which took shape under such conditions we should expect to be good, and Dr. Külpe's text-book is thoroughly good. Only in one regard must I confess to a feeling of disappointment: the author, despite a nominal adherence, has departed very widely from the Wundtian doctrine of apperception. His work cannot, therefore, be regarded as an intermediary between Wundt's *Vorlesungen* and *Grundzüge*; the book which shall lead from the former of those to the latter is still to be written. One can only hope, in the interests of education, that it will be written shortly. Other deviations from Wundt's system I shall notice later. There is none so important as this, though there are two or three others of primary significance.

The Introduction (pp. 1-29) falls into three sections: on the concept and problem of psychology; on its methods, and on the assistance derived by it from other sciences; and on psychological classification and literature. Psychology is a natural science; it deals with experiential data (*Erlebnisse*), in their dependence on

the experiencing (*erlebenden*) individual. Its direct methods are the introspective and experimental; its indirect, the memorial and linguistic. The definition will, I think, be admitted to be an improvement upon those generally current. Whether memory and language can constitute methods is arguable, but Dr. Külpe makes out a strong case for them.

The body of the work consists of three parts, which treat (in Wundtian fashion) of the elements of consciousness, of the ordinary combinations of these, and of their more permanent combinations to form "states of mind." "Consciousness" is only a collective term for the sum of all *Erlebnisse* in their psychological aspect. Elementary among these experiences are two processes: sensation and feeling. These may be conjoined in two ways: by fusion and by combination. In the fusion, the constituent processes retire before the unity of the total impression; in the combination, the constituents are, in the whole, as evident as (or even more evident than) they would be in isolation. The perfect sensation has four attributes, under each of which it may be investigated: intensity, quality, duration and extension.¹ The feeling is characterized by intensity, quality and duration. It is plain that fusion occurs when qualities combine, while time and space relations remain the same;² whereas combination implies spatial or temporal difference. I think, with Dr. Külpe, that the two types of compounds are to be kept distinct, and that each requires a special theory (statement of conditions). Wundt prefers to regard fusion as the most intimate form of association. The difference can hardly be termed a radical one at present, since but little advance has been made towards a psychological theory of either process.

Part I. (Elements) comprises two sub-parts. The doctrine of sensation occupies just 200 pages; the whole book contains 471. Here is proof positive (if any were still needed) that experimental psychology has not stopped short at the simplest mental processes, in confessed inability to cope with the more complex. The doctrine of feeling occupies something over fifty pages. Little more than half of the work, therefore, is taken up with the consideration of the elements of mind. And a good deal of that which is included in this half might have been relegated to a later portion of the discussion, *e. g.*, the criticism of ideational associations in Chap. 4.

It is impossible here to estimate the special chapters in any detail. Chapter 1 (Analysis of Sensation) gives an admirable account of the "psychophysical measurement-methods," of sensibility and sensible discrimination. The classification of the methods is the most logical and coherent of any as yet propounded. In fact, the writing of this chapter is itself sufficient to give the author a high rank among psychophysicists. The beginner who assimilates its contents (and the subject is not an easy one to master, as all teaching psychologists know), working through and experimentally verifying the illustrations appended to the symbolical exposition of each method, will have served no inconsiderable apprenticeship in the science. In the chapter on sensation-quality, there is made an attempt to estimate the number of distinguishable qualities of tone and brightness.³ The sub-cutaneous sensibility is divided (accord-

¹ The cutaneous sensibility has all four; the visual has quality, duration and extension; the other modalities, intensity, quality and duration.

² Intensive fusion may occur in the case of the paired sense organs. Here there need be no prior fusion of stimuli.

³ No such attempt is made for colors. Of course, "color" is a fusion of brightness and color-tone. But if we start out from arbitrary saturation-values; determine their number (*e. g.*, in the solar spectrum); and then determine the number of less and

ing to the rule which classifies sensation by reference to the bodily sense-organs) into the muscular, articular and tendinous. It is certainly well to avoid the slippery term "movement-sensations." And there seems to be nothing objectionable in the ascription¹ to the tendons of a quality of strain; to the muscles of that of contraction (usually experienced in the exhaustion-complex), and to the surface of the joints, of that of locally signed pressure (*cf.* the skin). If there are missed in this chapter references to English research (*e. g.*, to the audition-theories of Rutherford and Waller), it must be remembered that the work is a German text-book, written for German students; and that, where the space-limitations are so strict, a selection has necessarily to be made. Chapter 3 is concerned with the intensive sensibility and sensible discrimination, and with the theory of the latter (Weber's law).

The fourth chapter (Centrally Excited Sensations, Reproduction and Association) is a really important contribution to systematic psychology. It is curiously Herbartian in terminology. Setting out with a rejection of the associationist dogma, "*Nihil est in memoria, quod non prius fuerit in sensu*," the author (1) states the problem of "recognition;" (2) inquires into the properties of centrally excited sensations; (3) subjects the associationist doctrine to a severe criticism; (4) seeks to determine the motives and tendencies, the basis and accuracy of reproduction; (5) enumerates the general conditions of centrally excited sensations; and (6) attempts a psychological "theory" of their origin. There is no "quality" attaching to centrally excited sensations, other than the qualities possessed by those principally excited; still less do the central sensations or any of them constitute a new modality. But memory is not on that account by any means identical with the reproduction of the remembered; and there are indications that the central sensations do not stand in a simple relation to the peripheral. Direct recognition consists, psychologically regarded, in a special centrally exciting efficiency (*Wirksamkeit*) of the "known" impressions or memory-images, and in a corresponding mood (*Stimmung*). The known, as such, is pleasant; the unknown, unpleasant. The known falls into place, into connection and relation; the unknown remains for some time isolated, is related by effort.² The development of Dr. Külpe's theory must be followed in the book itself. It is not easy reading, and the beginner would do well to familiarize himself with the ordinary associationist position, with some less penetrating discussion of "recognition" (*e. g.*, Höffding's³ or Wundt's in the *Vorlesungen*, which is very like the author's, but more popular), and with certain of the experimental memory-researches, before attempting its digestion.

The doctrine of feeling (pleasure-pain) is expounded in a single chapter of eight sections. The author, as I have indicated above, goes further than Wundt, and makes feeling (rightly, I think, though I should prefer the abstract term "affection") an independent mental process, of equal rank with sensation. The two current

greater saturations distinguishable within each of the values so obtained:—and if we regard saturation-values and illumination-values as identical:—the attempt is not hopeless, though the result is only hypothetical. The number of color-qualities proves to be about 40 50,000.

¹ Which, however, goes beyond Dr. Külpe's treatment.

² To the adult mind, nothing, of course, is absolutely "unknown." At least a word will be associated to its impression.

³ Höffding, though his theory is referred to (without a name) in the text of the chapter, is not mentioned in the list of references, p. 230.

methods of affective investigation are happily termed the serial (Fechner) and the method of expression (Mosso). Cautiously but quite definitely formulated is the view—surely correct—that it is intensity of stimulus which is effective for the pleasure-pain movement; the quality of stimulus doing no more than shift the limen of affection (or the central indifference-point) to right or left upon the abscissa of Wundt's well-known diagram. Theories of feeling are suggestively tabulated, and that of Wundt finally accepted.

Part II. (Conjunctions of Elements) also comprises two sub-parts. Fusion (some sixty pages) and combination (ninety pages) have each three chapters devoted to them. (1) The account of tonal fusion is based on Stumpf¹ (*Tonpsychologie*, II.). I notice several deviations from Stumpf's views, and cannot doubt, from my own experience, but that many others would have appeared, had Dr. Külpe been able to discuss the *Tonpsychologie* more in detail. A psychological theory he wisely does not attempt. (2) The sections on visual fusion (color-tone and brightness, based partly on Hillebrand's important paper, denying the attribute of intensity to visual sensation), etc., contain a criticism of Ebbinghaus' theory of vision. (3) Emotion and impulse are considered as representing fusions of sensation and feeling. Whether we regard the author's special conclusions and analyses as correct or not,² one point seems clear, that no exposition of systematic psychology, in book or lecture form, can in future neglect the doctrine of fusion in general, and of sensational fusion in particular. Just as the psychology of sensation has been elaborated, must the psychology of sensation-complexes be elaborated. When we see, our visual impressions are fusions; when we speak, our auditory impressions are fusions. There is enough opportunity for experimental work here to occupy at least a generation of psychologists.

The combination chapters discuss (1) the two psychological spaces of touch and sight. Dr. Külpe gives up Wundt's theory of the influence of eye-movement in the "construction" of the third dimension. Unwisely, it seems to me. That area is "given" we should all admit; every tactual and visual sensation is extended. But if the depth-idea is not original but associative (pp. 36, 373, 383 ff.), can not we get at it best in terms of eye-movement? For the rest, psychophysical "extension" and the Stumpf-James "bigness" (cf. p. 387) are quite different matters.³ (2) Of the duration of sensations not much can be said. Of our estimation of intervals, and its conditions—thanks mainly to Meumann—a good deal. The recent revolution in the time-sense psychology will be familiar to everyone. I need not resume the author's paragraphs. He might well have given the topic more space. (3) Under the head of association proper are reviewed the phenomena of contrast (color and brightness), and of action ("reaction"). Ideational association had already been considered in I. 4. Wundt's reference of contrast to the law of relativity is rejected; Dr. Külpe tends towards a peripheral theory. My own experiments on binocular contrast appeared to me to point to the necessity of a central hypothesis; but nothing certain can at present be said. The author's theoretical analyses of the two forms of the simple reaction have already been published.⁴ The compound reactions are here treated from a similar point of view.

¹Dr. Külpe has recently stated his views of fusion in the *Zeitschr. f. Psych. u. Phys. d. Sinnesorgane*, V., pp. 360 ff.

²I may, perhaps, be allowed to refer to a tentative note in *Mind*, N. S., II., 6, pp. 285 ff. which I hope shortly to republish in enlarged and revised form.

³Cf. Ladd, *Psychology*, p. 326.

⁴*Phil. Stud.*, VI., VII.

Part III. (States of Consciousness) gives twenty-odd pages to attention, five to self-consciousness and will, and five to sleep, dreams and hypnosis. The treatment of attention we must examine somewhat fully.

There can, I take it, be no doubt that, for Wundt, conation (whose quality is apperception) is a "conscious" process. Apperception fuses with all the remaining conscious content; but it is itself content,—psychology deals with nothing beyond content. It can not be disentangled from the concrete to anything like the degree to which affection can,—to say nothing of the practically isolable sensation. But it is content, and we consciously-experience (*fühlen*) it as the quality "active" or "effortful." The diffused excitation consequent on the explosion of a frontal-lobe cell is paralleled by a mental process; just as the explosion of a sensory-area cell is so paralleled. If this is not Wundt's position, in the *Psychology*,¹ the *Ethics*, and the *System*, then words must surely have changed their meanings.

Dr. Külpe *a changé tout cela*. Let us put the passages together. (1) Pp. 219, 220. Apperception is a term covering "undeniable facts of consciousness." The activity of will is the expression of the totality of previous experiences. *Only a small part of it*² is conscious; the rest lies below the limen of consciousness. (2) Pp. 273-275. The elementary quality of will, effort (*Streben*), is reducible to definite sensation-qualities. (3) Pp. 300, 220. The "unconscious" is characteristic for the activity (*Wirksamkeit*) of fusion and attention. The "unconscious" is an "effective, but in itself not perceptible constituent of a composition of elements." The "unconscious" covers physiological processes, to which no mentality runs parallel.—The expressions are not univocal. That in giving the psychophysical conditions (theories) of certain mental processes, physiological processes, not in themselves consciously-experienced by us, must be taken into account, no one would deny (*cf.* Müller's recent work on memory). I should not affirm, either, that apperception could be "perceived" (*wahrgenommen*). The verb is only applicable to the presentation of sensations. But that there can be an *unconscious* constituent in a complex of *conscious* elements seems, in terms of the definition of psychology, impossible. The author is sailing perilously near to von Hartmannism, with all its unpsychological implications. (4) Pp. 438 ff. The "small part" of will, which is conscious, is not will at all. Introspection shows no "new conscious act" in attention; we have only "effort" (a sum of organic sensations); there is no "special content: internal activity."³ On p. 446 *Aufmerksamkeit* and *Inhalt* are opposed; *cf.* p. 464 (*die Inhalte selbst . . . die Apperception*). The principal conditions of the appearance and persistence of attention are to be looked for outside of consciousness. Attention is not derivable from the posited elements of mind. The psychophysical process of attention is an inhibitory one. "If we combine the view that there must exist a special central organ for the operations of attention with the view that all these operations may be regarded as inhibitory processes, we obtain Wundt's apperception-theory in its most recent form." We have *Hamlet* with Hamlet left out: Wundt's

¹In the 4th Ed., as well as the previous editions. *Cf.* Külpe, p. 461, with the *Phys. Psych.*, II, p. 274. Dr. Külpe's loyalty to Wundt has led him to retain the latter's phraseology; and this retention can not but prove regrettably misleading.

²My italics.

³The adjective "special" is misleading. For Wundt, the *Thätigkeitsgefühl* (= conscious experience of effort = apperceptive content proper) is a general content; but it is special, as differing from sensational or affective contents.

theory *minus* the "consciously-experienced activity, which is characteristic of the whole process of attention!" Except for the postulation of the organ of apperception (and I admit that the "except" is a large one), Dr. Külpe seems in full agreement with Professor Münsterberg. (5) Pp. 462 ff. The will-process need not be conscious. There is not necessary a third, qualitatively definite element, beside sensation and feeling. The facts of will are referable partly to the laws of reproduction, partly to apperception (*i. e.*, to unconscious physiological inhibition-processes).

Plainly enough, there is a great gulf fixed between the two theories.¹ Dr. Külpe has, for purposes of psychology, sworn allegiance to the heterogenists; though he reserves the physiological ground to autogeny. Perhaps in a second edition he will clarify his views, and give up the confusing Wundtian terminology. As things are, he seems at times to recognize a consciousness which is outside of and beyond conscious content; and to be attempting to give the appearance of fullness to a capacious old bottle, with but little new wine at his command.

In other respects, the treatment of attention is as exhaustive and clear as that of any other subject discussed in the book. I do not, however, think that it is pedagogically advisable to defer the consideration of this process till the very end of a text-book on psychology. In fact, there are several alterations in the arrangement of the contents of the work which might be proposed. The greater part of I. i. 4 should, in my opinion, be relegated to II. ii. 3. Section 40 (on the simple quality of will) does not belong in its setting. A I. iii. might have been introduced, for the consideration of apperception, without begging the question of its *Gefühltheits* or of its elementariness.² To explain impulse, etc., without apperception is not good psychology.³ And minor changes might be suggested.

In estimating the work as a whole, one looks round for something to compare it with. I can find nothing but Höfding's "Outlines." There is some similarity between the two volumes. Both are published as text-books; both are compressed and matter-of-fact in style, and far from easy reading; both contain real contributions to psychology, and are not mere compilations. But there the analogy ends. Dr. Külpe's *Grundriss* stands alone as the first published complete guide to experimental psychology. And we must judge its quality to be worthy of the place in history which this fact must, of itself, assign to it.

The present review has left a vast amount of debatable matter (contained especially in the sections entitled "conditions" of such and such processes) entirely untouched. But it has already outrun its limits. It needs only to be noticed, in conclusion, that the book is well printed, on cream (not on white) paper; and that, besides the table of contents, it contains a valuable index.

E. B. TITCHENER.

Pain, Pleasure and Aesthetics. An essay concerning the Psychology of Pain and Pleasure with special reference to Aesthetics. By HENRY RUTGERS MARSHALL. Macmillan & Co., New York.

The new inductive psychology, which began with laboratory experiments upon the senses, reaction-times, and the psycho-

¹ For deviation from Wundt on a point of detail, which seems due to a misunderstanding of him, see p. 464.

² Which latter, however, seems granted; p. 452, § 75, 1.

³ Cf. Mind, l. c., and Külpe's own analysis, for the justification of this. He has, of course, no room for a fusion of affection with conation; cf. p. 446.